

Weekly Report

22/05/2019 – 28/05/2019

Last week, I had an idea about transform script to story emotional arc [5] as a line chart and then transform the line chart to video timing based on NLP to extract reading or speaking speed with words. Moreover, that storyline can map behind a time series data, then run the time series data as a video that timing base on the video timing by NLP. This technique let user can reproduce the data by the different scripts that mean they will create many videos support one dataset but various aspects (different scripts).

The user can select the section the storyline shows the outliers like the peak point, the lowest point, etc. and then add the auto-suggestion animation like slow motion to emphasize that data when rendering the video. Moreover, let the user add an annotation to especially data. The render the video and adjust the speed by the user.

Unfortunately, this idea may have a gap that is how to convince the user to put in the script to create a new video from previous data. So I cut out the section of import script to generate storyline. Moreover, replace by the outlier patterns of time series data [1]. I focus on this point because of the outlier point can tell the user the anomalies that need to look at and try to understand the phenomenon. Moreover, I read an online article about the current state of time series anomaly detection [2] and found it is possible to determine the anomaly points in the data provided by various algorithms.

The questions of this point are 1) how to determine the suitable outliers? Because there are many types of outliers that need to be classified in the data. 2) how to separate the storyline for focusing? A paper is your paper [6] I read that maybe adapt to separate the storyline by the climax (may be called outlier).

If it is work, we can add the animation at the outliers such as slow in/slow out, constant speed [3], pause, tag annotation. Unusually slow in/slow out (SI/SO), it is a modifier of constant speed. I think if we detect the peak and lowest point of each section of the story timeline we can add the SI/SO before the height and lowest point by autogenerating to emphasize the exceptional values/data.

The question is why the SI/SO should be added at the before the peak or lowest point. We need to use a case study to tell us, is it suitable? Alternatively, it has understandability or not.

One more thing that we can consider to add in the animation is the smooth animation types by tween.js [4]. I think it can be a part of the slow-motion kind that let the user adjusts at the end before export a video.

Moreover, we went to visit Xinhuaazhiyun today, and I asked Tianyi about the current state of Shuwen tool development that they have an automatic generate some emphasizing data pattern or not. She said right now it can point the highest, lowest but it can't auto-generate the slow-motion. Regardless it has a built-in video editing tool. So I think we will discuss with Junhua again about this topic.

[1]

https://www.ibm.com/support/knowledgecenter/en/SS3RA7_17.0.0/components/dt/timeseries_characteristics.html

[2] <https://blog.statsbot.co/time-series-anomaly-detection-algorithms-1cef5519aef2>

[3] Dragicevic, P., Bezerianos, A., Javed, W., Elmqvist, N., & Fekete, J.-D. (2011). Temporal distortion for animated transitions, 2009. <https://doi.org/10.1145/1978942.1979233>

[4] <http://learningthreejs.com/blog/2011/08/17/tweenjs-for-smooth-animation/>

[5] Reagan, A. J., Mitchell, L., Kiley, D., Danforth, C. M., & Dodds, P. S. (2016). The emotional arcs of stories are dominated by six basic shapes. *EPJ Data Science*, 5(1), 31. <https://doi.org/10.1140/epjds/s13688-016-0093-1>

[6] Yu, L., Lu, A., Ribarsky, W., & Chen, W. (2010). Automatic animation for time-varying data visualization. *Computer Graphics Forum*, 29(7), 2271–2280. <https://doi.org/10.1111/j.1467-8659.2010.01816.x>